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GUESTS

Charles Kennel is the director of the Scripps Institute of Oceanography at the University of California-San Diego and a commissioner on the Pew Oceans Commission.

Vice Admiral Paul G. Gaffney II, a commissioner with the U.S. Commission on Ocean Policy. He's also the senior uniformed oceanography specialist for the US Navy, and president of the National Defense University.

John P. Connelly, president of the National Fisheries Institute, a trade association representing the fish and seafood industries.

Michael Sissenwine, director of science programs for the National Marine Fisheries Service, under NOAA, National Oceanic and Atmospheric Administration as it's known.

Article Text:
IRA FLATOW, host:

This is TALK OF THE NATION/SCIENCE FRIDAY. I am Ira Flatow.

Ready for today's quiz? Here it is. The oceans and marine animals within are: A, headed for serious trouble; B, in serious trouble; C, doing just fine; D, not enough information to tell at this time. The answer is, well, all of the above, depending on whom you talk to. According to the 16 commissioners of the US Commission on Ocean Policy--that's a presidentially appointed commission--I quote, "The oceans are in trouble. Our coasts are in trouble. Our marine resources are in trouble, and perhaps in serious trouble."

Another government agency, the Department of Commerce's National Oceanic and Atmospheric Administration, NOAA, is less alarming, with its annual report to Congress headlining `Another Year of Success in Rebuilding America's Fish Stocks.' The report highlights the good news: 70 overfished species continue to recover. Four species were taken off the overfished list in 2002.

Several recent reports tell of the loss of large numbers of fish, widespread pollution and runaway coastal development that is having a serious impact on the seas. For instance, the Pew Oceans Commission report says that many ecologically and commercially crucial fish species, including salmon and groundfish, face overfishing. And an increasing number of species are being driven

to extinction. A letter in the journal Nature last month says that 90 percent of the large predator fish species--tuna, marlin, swordfish--90 percent of these fish are gone.

Yet another report by the fishing industry, the National Fisheries Institute, says US fish stocks are healthy for the most part, that overfishing isn't a problem in most of the managed stocks, saying, quote, "Far from needing massive overhaul or reform, the US fisheries management process is practicing robust conservation that, if anything, requires only minor adjustment."

So what is the truth? What research do we need to get to it? This hour we'll take a look at the reports that have come out, get a preview of those to come, and we'll take your questions about the ocean. And you don't live on a coast? It doesn't matter what you do in your back yard in Kansas? Well, it does have an impact on the ocean, too. So give us a call. Our number is 1 (800) 989-8255; 1 (800) 989-TALK. And as always, you can surf over to our Web site, sciencefriday.com, for more information.

Let me introduce my guests. Charles Kennel is the director of the Scripps Institute of Oceanography at the University of California-San Diego. He is a commissioner on the Pew Oceans Commission. He joins us from the studios of KPBS in California.

Thank you for being with us today, Dr. Kennel.

Dr. CHARLES KENNEL (Director, Scripps Institute of Oceanography): Thank you, Ira.

FLATOW: You're welcome.

Vice Admiral Paul G. Gaffney II is a commissioner with the US Commission on Ocean Policy. He's also the senior uniformed oceanography specialist for the US Navy, and president of the National Defense University. He joins us by phone.

Thanks for being with us today, Admiral Gaffney.

Vice Admiral PAUL G. GAFFNEY II (Commissioner, US Commission on Ocean Policy): Great to be with you.

FLATOW: Thank you.

John P. Connelly is the president of the National Fisheries Institute, a trade association representing the fish and seafood industries. That's located in Arlington, Virginia. And he joins us from our NPR studios in Washington.

Thank you for joining us today, Mr. Connelly.

Mr. JOHN P. CONNELLY (President, National Fisheries Institute): Pleasure to be here, Ira.

FLATOW: Also in our Washington studios is Michael Sissenwine. He is the director of science

programs for the National Marine Fisheries Service. That's under NOAA, National Oceanic and Atmospheric Administration as it's known.

Thanks for being with us today, Dr. Sissenwine.

Dr. MICHAEL SISSENWINE (Director of Science Programs, National Marine Fisheries Service): Thank you.

FLATOW: Lot of stuff to cover. Let me start with you, Charles Kennel. The Pew Ocean Commission is probably the most critical of ocean policy of all the reports we've talked about. Why is that?

Dr. KENNEL: Well, let me just start by saying who we were. We were an independent group. We consisted of sitting politicians, like Governor Knowles of Alaska, and Governor Pataki of New York, Mayor Joe Riley. We had several fishermen,
several representatives from conservation groups. I was privileged to be one of four scientists on board. And we were chaired by Leon Panetta, who was the son of a fisherman in Monterey who had grown up to become the chief of staff to the White House in the Clinton administration.

We went around the country. We went to Maine, to South Carolina, to Louisiana, California, New York, Iowa, Alaska, Hawaii. We found that every--and when we went there we talked to scientists and fishermen, conservationists, government officials and interested citizens. Every region was different. Every region had its separate issues. But a prevailing theme came through to us: There's a crisis developing unseen beneath the waves, and that we were finding that too many of our marine ecosystems were in serious decline.

We found that there were a number of separate factors that are all interrelating to lead to this serious problem. Clearly, fishing is a very visible issue that has a lot of advocates on both sides of the issue. We found that over the last 20 or 30 years there's been a tremendous amount of development near our coastline. More than half of Americans now live next to the coast, and their activities are affecting our oceans. We found that you couldn't consider now the health of our coastal oceans without thinking about how they interact with the land. We found that both air and water pollution were having a serious effect on some of our marine ecosystems.

But the most important thing was that each region was different. Each region had its separate ecosystem. Each region had its separate economic interests. And as a result of that, we reached the conclusion that we would recommend that the nation
undertake to manage its coastal oceans in a new way, looking at all the factors that affect the ecosystem, not just fishing, not just pollution. Don't look at them separately, but try to understand them and make decisions on how they interact.

FLATOW: Did you reach the conclusion that there was a tremendous amount of overfishing going on?

Dr. KENNEL: Well, there's a very serious overfishing, and it depends on the region. In some

regions we found a very distressing situation. The Grand Banks off of Nova Scotia, which had fed the United States and Canada for several centuries with cod--I think the last cod was discovered there about 10 years ago. And they have been closed in an attempt to bring the cod back.

As we went around the country we found differing stories in different regions. We found that Alaska, which is where half of all the fish in the United States are caught--we found a healthy economic situation. We found a vibrant fishing community and cannery community, and people were quite happy with the management in Alaska. But at the same time, if you looked carefully at the data, you could begin to see signs of stress. You could see that certain of the fish species that they used to catch are no longer there. And so even they, where they have a serious commitment to sustainable fishing practices--there are signs of things that would make you worry.

FLATOW: John Connelly is president of the National Fisheries Institute. You released a point-by-point white paper, I'll call it, refuting much of what the Pew report says. Why is that?

Mr. CONNELLY: Well, maybe, Ira, it's better to start on the points of agreement with the commission. Anytime a group of private citizens can bring new information in and make it part of the public debate we find that to be a helpful exercise. There are some areas, though, that would have strong disagreement with the commission and their report.

The premise of the report is that the US fisheries are absolutely collapsing, are in massive overhaul. Where I'd agree with Charles is that each region of the country is different, and each fishery around our nation is different. Some are very robust, some are very healthy. Others have experienced stress and have been overfished. What's important for the industry is to work with the government to develop an integrated plan to ensure that those fisheries that have been overfished are managed in a way that are sustainable now and in the future.

So the premise of their report is what concerns us, that the fisheries are collapsing, when we think that NOAA and the National Marine Fisheries Service study that came out within the last month indicates most of the fisheries are actually doing well. And in those fisheries that are stressed, we need to have robust and integrative strategies to ensure that they get back up to optimum levels.

FLATOW: Admiral Gaffney, your commission's report is not coming out till later. In a few months, correct?

Vice Adm. GAFFNEY: That's correct. In a few months. I wouldn't pin it down to an exact week at this point, but I suspect in the late summer or fall.

FLATOW: Are you going to be covering the same kinds of questions: fisheries, wildlife, things like that?

Vice Adm. GAFFNEY: Yeah. I think you could characterize our report as being a little broader

than the focus that the Pew Commission took. While we will definitely cover living marine resources, there are a number of other topics that we have been assigned to cover as well, and so we'll do that. Our report will probably be rather substantial and cover a much broader field.

FLATOW: Yeah, you have already. And your half-way report said that, quote, "The oceans are in trouble and our coasts are in trouble. Our marine resources are in trouble, perhaps in serious trouble." Did that give us a foreboding of what your report might say?

Vice Adm. GAFFNEY: I think--well, first, I can't tell you exactly what the words are going to say. We are still in the preliminary draft stage of a very long report. I hope we won't be as judgmental and we'll, in fact, spend more of our time in our recommendations and giving actionable recommendations on how to improve things in the fisheries area and in other areas as well. There may be some comments...

FLATOW: Right.

Vice Adm. GAFFNEY: ...like that, but frankly, I don't--that was the midterm report and we have some new information now. You covered that very well at the opening. And that should be considered over the next couple of months as we're writing.

FLATOW: Dr. Sissenwine, as a scientist, where is the science in all of this, in straightening all of this out?

Dr. SISSENWINE: Well, there's a tremendous amount of science. And, in fact, various people, as they speak about the subject, use the science. I am concerned if it's used selectively and doesn't give a balanced picture. Clearly, the Pew Commission report points out some serious problems, threats and concerns, but, in fact, it also uses many judgmental value-laden terms like `crisis,' and I don't know how to put that into scientific context. I think the numbers speak for themselves.

We have evaluated the status of the fish stocks around the country, and basically the numbers say that there is some sort of a problem of the stocks either being overfished--that is, they've been fished down from abundance levels that are those that would be considered desirable to levels that are too low--or they're currently suffering from overfishing. That occurs in approximately 25 to maybe 35 percent of the cases, depending on which numbers, which year of data, you look at. That implies that essentially 75 or 65 percent are considered to be in good shape. If that's a crisis in some people's minds, that's fair enough. But as I say, the numbers do speak for themselves, and those are what the numbers are.

I do want to point out a couple of things that were mentioned in one of the opening comments about the Grand Banks cod situation, which was noted as a very serious problem. I think all scientists who have looked at that would agree that that's a very serious problem. Your listeners probably should be aware, though, that that isn't within the United States; that's in Canada. And there was a statement made that essentially no cod had been seen or observed in that system in 10 years. Well, the reality is that it's extremely overfished and depleted, but that's certainly not to the point of extinction where there are no cod present.

FLATOW: But you'd agree that we really don't know the extent of all the populations of the fish in the ocean, do we?

Dr. SISSENWINE: Well, we certainly don't know them all. And, in fact, if you list the individual numbers of species, there are more of them that we don't know the status of than the ones that we do. But that statistic is quite misleading because there are many, many stocks of fish that are very minor, represent a very small amount of the fishery. If you look at the stocks that account for most of what we're involved in in terms of fisheries, and account for most of the biomass in the ocean, we have reasonable assessments of those.

FLATOW: All right. Let me interrupt at a good time here. We're going to take a break and come back, take more phone calls and talk more about the states of the oceans here. So stay with us. We'll be right back.

I'm Ira Flatow, and this is TALK OF THE NATION/SCIENCE FRIDAY from NPR News.

(Soundbite of music)

FLATOW: You're listening to TALK OF THE NATION/SCIENCE FRIDAY. I'm Ira Flatow.

We're talking this hour about the oceans with my guests Charles Kennel, director of the Scripps Institute of Oceanography, University of California-San Diego; he is a commissioner on the Pew Oceans Commission. Vice Admiral Paul Gaffney II, commissioner with the US Commission on Ocean Policy; he's also the senior uniformed oceanography specialist for the Navy and president of the National Defense University. John P. Connelly is president of the National Fisheries Institute. And Michael Sissenwine is director of the science programs for the National Marine Fisheries Service. Our number: 1 (800) 989-8255.

Dr. Konnel, you've been pretty well battered by these people who are sort of disagreeing with you, if I might put it gently--Kennel, with the Pew Ocean Commission. So, Dr. Kennel, what do you got to say?

Dr. KENNEL: Yes. Well...

FLATOW: Any rebuttal to these charges that you've overstated the problems and...

Dr. KENNEL: Well, I think that...

FLATOW: ...become too emotional about it?

Dr. KENNEL: Well, it's always a very emotion-laden subject, and it attracts a diversity of point of view. But I think there's one area, I think, in which we can all agree, and that is whether you're a fisherman or a conservationist or you love the ocean or you love wildlife, you'd all like to figure out how to make it better. And there are some recommendations that I think may be important, but first I'd like to take a historical perspective.

You know, 30, 40 years ago, when the Stratton Commission, which was the last major time that our ocean issues were examined in completeness, started their work, scientists knew that ecosystems existed, that they were important, and that over the next 30 years or so we developed ways of understanding them and making rather much more comprehensive measurements. Not only that, but we began to look historically at how our ecosystems had prospered or not in the times before 1960. And that historical perspective is very interesting because we know now that our marine ecosystems were much, much richer in the past than they are now. They were many times richer.

And, in fact, we tend to look at our marine ecosystems when we grew up as a boy. We say to ourselves they were good then, and if they've declined that's our standard of measurement. But, in fact, they were much richer in the past. When Columbus first sailed into the Caribbean, the turtle population was so large that the Spanish could hear the turtles breathing from a mile away. It was a much richer ecosystem in the past than now. And much of...

FLATOW: Well, everything on Earth was a much richer ecosystem in the past.

Dr. KENNEL: Yes, yes, indeed, but that offers hope. You see, the central point of this is that there is hope. The oceans can support a much larger and much richer variety of marine life if we take care of the ecosystem there. If we would...

FLATOW: All right. Let's talk about some of the recommendations that you would make, and let me run it by my other guests and see whether they, you know, salute it or not, so to speak.

Dr. KENNEL: OK.

FLATOW: Go ahead. Give us...

Dr. KENNEL: Well...

FLATOW: At the top of your list, what would you do?

Dr. KENNEL: Yeah. The top of our list is to recognize that the fish that we like to eat and the fish that we catch are part of a web of life. That web of life consists of other fish that we're not interested in, but they are the main top predators. It consists of the plants at the bottom of the ocean. It consists of their habitat, the filter feeders. And there is a web of life that is affected by a whole variety of factors, you know, the air pollution, water pollution, fishing. We need to consider all of those together.

And our management process then should bring together those people who are--if your problem, for example, is runoff from a river, then you should have the watershed managers in the same room discussing the health of our oceans along with a fisheries manager. So therefore the Pew Oceans Commission calls for a series around the country of regional ecosystem management councils in which the people responsible for the key decisions on all the factors that affect that particular region's ecosystem get together and decide in an integrated way how to deal with it and

work with the fisheries management council.

FLATOW: John Connelly, any problem with that?

Mr. CONNELLY: Well, this is an example of where we think the report is redundant of some of the activity that already is under way in managing our fisheries. Around the nation's fisheries there are a thing called fishery management advisory councils, which are balanced groups of folks involved in commercial fishing, in recreational fishing, and then individuals from the scientific or conservation community that come together to determine what the state of the fishery is and then develop an integrated strategy going forward on how to maintain the fishery in a sustainable manner. They make a recommendation up to the National Marine Fisheries Service and NOAA as to whether that's an acceptable plan. And then that, on an annual basis, is how the fishery is managed. So there's good input from recreational fishermen, commercial fishermen and the non-profit or academic scientific community.

Dr. KENNEL: And we believe that process should be continued, but broadened into a wider ecosystem management council that would also make a broader range of integrated recommendations to, let us say, NOAA.

FLATOW: If I hear what you're saying, Charles Kennel, is that while the fishing industry is talking about the food fish that we all eat, you're saying the issue is bigger than that and has to do with all the other fish life...

Dr. KENNEL: Yes.

FLATOW: ...invertebrate life...

Dr. KENNEL: Yes.

FLATOW: ..the life that surrounds in the ocean that are impacted by fishing.

Dr. KENNEL: Yes, and the other factors that affect the ecosystem. But let's think of the marine food chain for a minute. The big fish that we like to eat are the top predators in that chain. They're usually the biggest ones, and they eat smaller fish, and the medium-size fish eat the even smaller. Finally, they're eating the plants and the microbes. And this is the web of life that's supporting the one fish that we like to catch.

And one of the interesting studies that has occurred over the last 10 or so years has been the realization that when you take the top predator from one of these ecosystems, you alter the balance of life. And there are cases where when the taking of the top predator has gone too far, too far, then you will find that even the plants at the bottom of the ocean--the plant population has changed dramatically because you've changed the food chain. And what the scientists have been finding over the years is that over a 20- or 30-year period, there's been a decline. You know, we've stopped taking the big fish; now we're taking more and more--you know, fishing down the food chain, and we're taking smaller and smaller fish.

This international report that just came out two weeks ago from Dalhousie University in Canada documented the fact that over the last two decades the number of big fish in the ocean has declined by about 90 percent. There are only 10 percent left. So clearly, this trend is not a good one, and the taking of the big fish has implications that we don't always understand on the rest of the ecosystem. But where we have studied it, the impact has been serious.

FLATOW: 1 (800) 989-8255 is our number. Let's see if we can go to the phones and get some calls in from people who are on the line waiting to ask a question or two. Let's go to Matt in Michigan. Hi, Matt.

MATT (Caller): Hi. I have a question. I'm wondering how the findings of these different reports actually deal with the quality of the different fish that are coming out of the oceans. Do they show any relationship between the pollutions that are coming out and how the end result of the fish are actually affecting people? I'll take my comments off the air.

FLATOW: OK. Professor Sissenwine, any--Dr. Sissenwine?

Dr. SISSENWINE: I don't think that the reports have addressed, to any significant degree, the issue of human health issues associated with the fisheries. There are certainly many people who have studied the value of fish as a food product for humans, and, of course, we know a lot of important and positive things about fish in our diet. There are some situations where contaminants could be a concern, but I don't think that's in the subject matter of these reports.

I do agree that the general issues raised in the Pew Commission report concerning non-point-source and point-source pollution and excessive nutrients are very important and do need to be studied scientifically and addressed. I agree with their concerns about needing more of an ecosystem approach, or their advocacy for that, looking at watersheds in a holistic way, including the fisheries. These are all, as was mentioned, things that I think we can all get behind in terms of approaches.

Dr. KENNEL: Yes.

Dr. SISSENWINE: The problem is that the devil's in the details in terms of how you actually do these things. The idea of looking at the position in a trophic web is not a new one. My laboratory, which I directed until recently, in Woods Hole has probably looked at the feeding habits of over a million fish over the last 30 years. And we find that the trophic web is incredibly interesting, but also complex. So these general ideas are ones that scientists are ones that scientists all over the country and all over the world are pursuing, but the actual on-the-ground implementation of these approaches is quite challenging.

Mr. CONNELLY: And, Ira--this is John Connelly--I would just echo Mike's comments, but particularly his first comments
that, on balance, fish remains an incredibly healthy food. The American Heart Association, the American Dietetic Association, the US government continues to encourage folks to eat fish at least twice a week, because it is by far the healthiest protein choice.

Dr. KENNEL: Yeah. I...

Mr. CONNELLY: So, on balance, fish remains an incredibly important part of our diet.

Dr. KENNEL: This is Charlie Kennel in San Diego. I think everybody is in violent agreement here the fish supply, the food supply is wonderful, and it is--there's been nothing that the Pew Commission heard that would say that our food supply from fish was in any way in danger. It's very healthy, and we all want it to get better, and we're all in violent agreement on that point. We want more of it.

Mr. CONNELLY: Absolutely.

FLATOW: But would you also agree that if you leave an endangered species or population of fish that has been overfished--if you leave them alone for a certain amount of time they'll come back?

Dr. KENNEL: Well, it stands...

FLATOW: Is there general agreement on that?

Dr. SISSENWINE: This is not--there are no guarantees, but the experience throughout the world has been that fish populations can rebuild...

Unidentified Panelist: That's right.

Dr. SISSENWINE: ...and rebuild quite remarkably if they're allowed to.

Unidentified Panelist: Yeah.

Dr. SISSENWINE: If there's good, conservation-oriented fisheries management, there's reasons to believe and experience to say that we can be successful.

Dr. KENNEL: You...

Dr. SISSENWINE: There are a few situations that have been more problematic, but certainly the evidence very strongly says we can rebuild fish stocks when there have been problems. Of course, it's also pretty obvious that it's much better to prevent the problems before they occur, to have a good conservation-oriented...

Dr. KENNEL: Yeah. Yeah. Yeah. Yeah.

Dr. SISSENWINE: ...program in place in advance of the problems.

Dr. KENNEL: Yes, indeed, though the hope is that you really can rebuild them. And the idea is very simple: Pick key habitats where the fish are--key nurseries for the fish, and you protect

them. You don't kill them while they're in there, and you let them grow up to reproductive age. And it just stands to reason there'll be more of them inside that region. Now the interesting thing is that there's been evidence from the few experiments that have been done that the fish, of course, don't know that there's a boundary there, so they swim out and they leave, and at that point when they are caught they are fructifying the entire region.

And the scientific studies that we've done thus far suggest that you could make a network of relatively small reserves, provided they're at key points for the fishes' breeding and habitat. A relatively small network of marine reserves could very well be nurseries that would then provide the entire region with more fish, and the hope is then that, of course, our fisheries will be more prosperous as a result of that as well. So we think of that--if we could establish these reserves and protect the fish while they're reproducing, that there is a great deal of hope that it will be a win-win for both the environment and the economy.

FLATOW: How about fish farming? There are reports, and I know you touched on it, and I know Dr. Sissenwine talked about it. There are reports in the media about, let's say, for example, salmon fisheries that put out a tremendous amount of fish pollution from the waste of these fish and the food that they're farmed with. Is that a major problem and a growing one, or is that something under control?

Dr. KENNEL: From the...

Dr. SISSENWINE: It certainly can be, if the systems are not designed and operated in an environmentally sound way, so that there certainly are potentially negative sides of aquaculture. But there's a wide variety of species in aquaculture. Some of them are the higher trophic level species like salmon, which do tend to have some of these problems. Shellfish aquaculture, on the other hand, does not have similar types of problems. So I think it's pretty dangerous to make generalizations about it.

Dr. KENNEL: It is, and in the Pew, we did not make that generalization. We believed that the shellfish aquaculture industry was in very good shape at the present time. We also believed that aquaculture, because of some of the issues that we've identified, is certain to grow and to be an important industry. It's not yet very large in the United States. It's smaller than in many other countries. But we do think that if we could set it on a course where they adopted sustainable practices, then we would put us on a much better course for the future in terms of the availability of good food for everybody.

FLATOW: Mm-hmm.

Dr. KENNEL: Now at the same time, we also agree with Mike that things like--when you are eating salmon, for example, that has been grown in the fish farm, because the salmon eat other fish and because our boats bring in wild other fish that we don't like to eat but the salmon do, if you think that you're eating salmon and protecting the marine ecosystems on the blue water, you're probably not, because you're feeding them other fish that are part of the ecosystem.

Mr. CONNELLY: Well, see, the issue should be...

FLATOW: I need to break in first and remind everybody that...

Mr. CONNELLY: Sure.

FLATOW: ...I'm Ira Flatow and this is TALK OF THE NATION/SCIENCE FRIDAY from NPR News. OK. Who was jumping in there? Didn't hear.

Mr. CONNELLY: Ira, it's John.

FLATOW: John Connelly, go ahead.

Mr. CONNELLY: I think it's important to note that you had mentioned at the beginning of the question about pollution issues and runoff, etc. And as Charlie mentioned, this is a relatively new industry, but it's going to be a growing and important part of how we provide a healthy fish product to the American and global public. And there have been tremendous improvements over the last five, 10, 12 years in both how the fish farms actually operate and also some of their integration with government agencies. For instance, the Environmental Protection Agency, the Department of Agriculture, NMFS, etc., are all involved in regulating this. Importantly, also, because so much of the fish farming happens in state waters, state environmental agencies also are involved in monitoring effluents and discharges, etc., from these fish farms. So it's a fairly well-regulated industry, but as a new industry, they're also learning ways to do their operations even more effectively...

Dr. KENNEL: Yeah.

Mr. CONNELLY: ...more efficiently and better protective of the environment.

Dr. KENNEL: Yeah. Yeah. I do not mean to imply that they have ignored the issues. My belief is that the aquaculturists that we interviewed were all very responsible and were trying very hard to make their aquaculture industry sustainable. And I think that we should do everything we can to encourage them, you know, just to do that.

FLATOW: You don't sound like you're very angry with these people very much, or fish policy very much, Dr. Kennel.

Dr. KENNEL: Well, I think one of the things that sort of emerged from all of this is that this isn't one of your traditional environmental arguments in which you find people who think that environmental protection goes against economic development. In this particular case in specifics, if we could preserve the marine resources in this country and preserve those marine ecosystems, then I think it will be good for both the environment and for our industries that depend on the coast. It will be good for sport fishing. It will be good for commercial fishing. If the oceans are cleaner and healthier, it will be good for coastal tourism. And so this is a win-win. This is not a green issue...

FLATOW: Right.

Dr. KENNEL: ...any longer. This is a blue issue.

FLATOW: All right. I've got to...

Dr. KENNEL: The oceans have...

FLATOW: Let me...

Dr. KENNEL: Go ahead.

FLATOW: Let me interrupt because we have some business to take care of. We'll be right back after this short break and take some more calls, so don't go away.

I'm Ira Flatow and this is TALK OF THE NATION/SCIENCE FRIDAY from NPR News.

(Announcements)

FLATOW: You're listening to TALK OF THE NATION/SCIENCE FRIDAY. I'm Ira Flatow.

A brief program note: Join Neal Conan on Monday for the hot titles in children's books this season, plus hear nominees for our kids' lit classics.

We're talking this hour about ocean policy with my guests: Charles Kennel, director of the Scripps Institute of Oceanography--he's commissioner on the Pew Oceans Commission; Vice Admiral Paul Gaffney II, commissioner with the US Commission on Ocean Policy--he's also the senior uniformed oceanography specialist for the US Navy and president of the National Defense University; John Connelly is the president of the National Fisheries Institute; and Michael Sissenwine, director of the science programs for the National Marine Fisheries Service. Our number, 1 (800) 989-8255.

Admiral Gaffney, in your report that's going to be coming out in a few months, you're also going to be dealing with more than just the fish rights, but of mineral issues and things like that under the water, correct?

Vice Adm. GAFFNEY: Right. We'll cover a number of issues. In fact, many of the things that we've just talked about here in the last 40 minutes or so, especially centering around ecosystem management, I would say is something that is quite popular with the commissioners at this point, and about which we've spoken in open forum several times, maybe five or six times, in our open sessions. But beyond--and we're interested in ecosystems management not just necessarily for the health of the fishing industry. We are, of course, interested in that, but we're interested in tying it all together: watershed, coast, ocean, air, ice and people.

And one point that we seem to be converging on, although I will caution you that we don't have a

final report in our hand yet, is that we think, as a nation--or at least I think we'll think as a nation--we're not investing enough in the monitoring system one needs to resolve many of the questions that you've been debating here today. The monitoring system for our watershed is not in particularly good shape, and we've never really invented a comprehensive monitoring system for our coasts and oceans. And I don't just mean physical oceanography, but I mean the biological side of the equation as well. And I think we'll be quite strong that science-based decision-making ought to be based on some good, comprehensive, long-time-series data, so we can get to the bottom of some of these problems.

FLATOW: Interesting. So you're saying..

Dr. KENNEL: I think...

FLATOW: ...we don't have any real science to work on here.

Vice Adm. GAFFNEY: Oh, we have plenty of good science, and I think the characterization that the National Marine Fisheries Services is doing better all the time and having much better credibility in their stock assessments are great, but what we don't have is like we have in the atmosphere and on the land in some places: continuous readings, comprehensively over large areas for long periods of time, so that we can see all the parts of the equation constantly and find out what the real problems are, the causers of these problems may be. And so we, I believe, will argue strongly for national investment in the weather of the ocean, and that means more than just temperature and salinity and wave height, but some of the biological factors as well.

Dr. KENNEL: Yeah. The Pew Ocean Commission will agree with that. In fact, they came out with a recommendation to double the nation's expenditure on ocean research and monitoring, and pointed out that it had been constant for the last 20 years when a lot of other enterprises had been growing. And so we've been, in some sense, treating it with benign neglect. But I think it's interesting also to note that, over the 30 or 40 years since the Stratton Commission, the science itself has developed much more capability. And in the future, over the next 10 years, if some of these investments are made, then the science committee is going to be able to provide the decision-makers with the kind of continuous awareness of the state of our marine ecosystems and the waters that they live in. And so our decision-makers are going to know, on a seven-by-24 basis, what's going on.

This will be a comp--and there'll be new biological measurements, especially DNA measurements, made in the ocean--are going to provide a much greater capability for understanding how many fish are there...

FLATOW: Yeah.

Dr. KENNEL: ...how many different species are there.

FLATOW: On the other hand, I'm having trouble seeing where the money for this is going to come from. People are already talking about budget cuts. It wasn't too long ago that the

administration wanted to do away with research about earthquakes and the weather and hurricanes and things like that as being unnecessary. How will we...

Dr. SISSENWINE: Ira, if I could comment...

FLATOW: Yes, go ahead.

Dr. SISSENWINE: This is expensive. In fact, Congress and the administration have been supportive of increases in some of these programs in recent years. As a scientist, I'd always welcome a lot more and do welcome a lot more. But there has been some progress being made. And I think we all do agree on two key points, is that--we do need more of an attention on an ecosystem approach, and that that requires a long-term, comprehensive, highly scientific, standardized observing system
that includes more than the physics and more than just the plankton, but goes all the way up through the highest trophic levels.

I do think, though, that it would be unfortunate to give the impression that none of that exists. NOAA has been conducting standardized scientific surveys of fish and plankton and marine mammals and many other components of the ecosystem throughout the very, very large exclusive economic zone of the United States, some of these surveys being conducted in a standardized fashion for as long as 40 or 50 years. Actually...

Dr. KENNEL: Mike, we've been collaborating with you in Southern California on that issue...

Dr. SISSENWINE: Absolutely.

Dr. KENNEL: ...for the last 53 years.

Dr. SISSENWINE: And we will continue to do so. So there's much more to be done, but there's no question that there's also a huge investment that's already been made, and it is time to cash in on that and use it as effectively as we can.

Vice Adm. GAFFNEY: This is Paul Gaffney. I would say that the job for all four of us here and all of our colleagues is to make this case. This is the greatest maritime nation in this world. We depend more on the ocean and its coasts than any other nation for security and for commerce and for lots of other things. And to not have the best information possible about that environment that isolates us and connects us to the rest of the world is, in my opinion, laughable, and we should be making this argument. And I believe that all of these studies, the testimony of NOAA, testimony of NFI, the Pew Commission, our Ocean Commission report and others, should all be striving to make this point so that public policy can be based...

FLATOW: Well...

Vice Adm. GAFFNEY: ...on good scientific evidence.

FLATOW: Well, let me ask one other question about--public policy is one thing, but how do you get other countries who are fishing through the oceans, also, to cooperate, not just on the research, which sounds easy, but on any implementation of any conclusions that you come up with or policies you come up with?

Vice Adm. GAFFNEY: Well, I believe...

Unidentified Panelist: I'm sorry?

Vice Adm. GAFFNEY: ...that is certainly a mission for our government. The State Department has the lead on that, but virtually every other agency of government that has anything to do with the ocean also has its bilateral and international, multinational ways to influence that. And I think the US can stand up strong and tall. Our practices are good, and our research investment, as unsatisfied as we are with it, are better than most, and we should be able to go to the negotiating table and the convincing room and help more people cooperate with us in a responsible way.

Dr. KENNEL: And I'd like to point to the role of international science in that. You know, if science is done well, and if it is trusted, then it provides a common perspective and a common point of departure for, then, these debates and negotiations to take place.

Vice Adm. GAFFNEY: Hear! Hear!

Dr. KENNEL: And so I think that one of the things that does not occur regularly enough at the moment is the development of an international perspective on all of the issues that we have been studying so heavily in the last few years here in the US. And I think, if the scientists can get together and arrive at a common perception of what the issues are, then they can pass this perception off to the decision-makers, and they and the political processes in each country and so forth, and international negotiations, can then go forward. This won't get rid of all the conflicts in the system--they are still there--but at least the people will be arguing over the right thing. And so it's very important to develop a consistent international perspective on the status of our marine ecosystems around the world, starting with...

Vice Adm. GAFFNEY: Fortunately...

Dr. KENNEL: ...science, but moving beyond.

Vice Adm. GAFFNEY: Yes. Fortunately, in the area of fisheries, this does happen to be one of the places where international science is very strong, and where the US...

Dr. KENNEL: Yeah, there's the Food and Agricultural--yeah.

Vice Adm. GAFFNEY: ...is very much involved with the Food and Agricultural Organization of the United Nations. I happen to be the president-elect of the International Council for Exploration of the Sea, and we're very involved, of course, in the Intergovernmental

Oceanographic Commission and so on. So there's a lot of very good collaboration going on. It is more difficult translating some of these things into some of the management fora, because they're just difficult political issues. But the US is working very aggressively in those fora to try and achieve sound conservation regimes all over the world.

FLATOW: We're talking about the fish population of the oceans this hour on TALK OF THE NATION/SCIENCE FRIDAY from NPR News. I'm Ira Flatow.

We've just got a few minutes left. I usually give my guests, at some point in this show, the blank-check question. If you had a blank check and you wanted to solve a problem, how would you spend the money? And let me ask Dr. Kennel first because I'm sure he's got some real ideas on where the money should go.

Dr. KENNEL: Well, I think we've--I think that--I'm not the architect of government that some of the members of the Pew Ocean Commission are, but I must say that when they looked at it and the commission as a whole looked at it, they found that too many of our issues on the ocean are governed by a large, tangled network of single-purpose regulatory actions that have accumulated over the years by a variety of different agencies. And all of these interactions of interacting regulations make it difficult to actually arrive at the more comprehensive approach to ecosystem-based management that weare looking for.

And so the Pew Oceans Commission then arrived at the view that the United States--as a beginning, the Congress ought to enact a national oceans policy act, which for the first time sets forth the policy of the United States that will guide the different agencies in making their decisions, and presumably help them better integrate their decision processes and make them correspond much more to the fundamental ecosystems that are keeping the fish alive that we want to eat.

FLATOW: John Connelly, you've got a minute left. Any rebut or answer of your own?

Mr. CONNELLY: Well, I would go back to the previous comments, actually, Ira, and say I was struck by--it was either Paul or Charlie talking--that if I had your blank check, developing and ensuring that scientists identify the problem, and that a scientific consensus develop rather than a lurching based on one study or another study. I think it's very important that scientists develop consensus of the problem, and then society, through our political process and our policy-makers, will determine what we collectively want to do to solve that challenge that's identified through consensus science. So I would be a very strong supporter of increased funding.

FLATOW: Michael Sissenwine, quickly?

Dr. SISSENWINE: Yes. I certainly would put a big investment in modernizing and expanding the ecological observing system, using state-of-the-art technology. I think I'd agree with other people that this is a critical long-term investment. There's also an issue in terms of the structure of the fisheries themselves. We've come from a history where fisheries were open access, and this has led to overcapitalization, too much fishing capacity in some places. And that problem is

not going to be solved without some conscious rationalization of the structure of fisheries, and that could cost a lot of money.

FLATOW: Admiral Gaffney, 30 seconds.

Vice Adm. GAFFNEY: It's not just fisheries, it's land practices as well. Laws are too complicated for good, voluntary stewardship, and we need to invest a little bit in the education of the average voter on the importance of these issues. And I like observing. Thank you.

FLATOW: All right. OK, I'm observing it's time we have to say goodbye. I'd like to thank all my guests: Charles Kennel, director of the Scripps Institution of Oceanography, University of California-San Diego, and one of the members of the Pew Oceans Commission; Vice Admiral Paul G. Gaffney II, commissioner of the US Commission on Ocean Policy--he is the senior uniformed oceanography specialist for the US Navy and president of the National Defense University; John P. Connelly is president of the National Fisheries Institute; Michael Sissenwine is the director of science programs for the National Marine Fisheries Service.

Gentlemen, thank you all for taking time to talk with us today.

Dr. SISSENWINE: Thank you.

Vice Adm. GAFFNEY: Thank you.

Dr. KENNEL: Thank you.

FLATOW: You're welcome.

(Credits)

FLATOW: If you have questions, surf over to our Web site at sciencefriday.com. You'll find the address you can write to; also, you can leave us e-mail there and find SCIENCE FRIDAY's Kids' Connection, which are curricula for students and teachers. Also, you can download editions of SCIENCE FRIDAY. If you can't listen to them on the radio, you can put them in your Audible.com player and listen to them later, and also listen to the archives in real time on RealAudio.

Have a great weekend. We'll see you next week. I'm Ira Flatow in New York.